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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,978	04/26/2007	Hee Yong Park	57901/N305	8394

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EXAMINER	
FORD, NATHAN K	
ART UNIT	PAPER NUMBER
1712	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,978	PARK ET AL.	
	Examiner	Art Unit	
	NATHAN K. FORD	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/22/06, 4/26/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 states that the through holes are disposed between the cross-shaped part and the circular part (wherein the cross-shaped part is inside the circular part), but then recites that the cross-shaped part "extends around" the through holes, which implies that the through holes are disposed inside the cross-shaped part. This latter implication contradicts the first condition of the claim requiring the through holes to be disposed external to the cross-shaped part.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 states that the cross-shaped cooling branch extends around the "inside parts" of the second through holes. It is unclear how the cooling branch extends around the interior part of a through hole.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins, 5,474,614, in view of Ishikawa et al., US 5,382,311.

Claims 1-2: Robbins describes an electrostatic chuck comprising (Figs. 2-3):

- A chuck base;
- A dielectric film (20) mounted on the chuck base (3, 36-40);
- A cooling channel for supplying a refrigerant to the dielectric film, the channel comprising:
  - Two first cooling channel parts (24, 27) formed at the surface of the dielectric film to form concentric circles (3, 44-48);

- Second cooling channel parts (22) which connect the two first cooling channel parts (3, 44-48);
- A second through channel (21) formed through the center of the dielectric film for supplying the refrigerant to the center of the wafer.

With reference to Figure 3, Robbins disposes the electrodes just beneath the dielectric film, rather than within the film. Nevertheless, this configuration is well-known in the art. Ishikawa, for instance, describes an electrostatic chuck in Figure 3 comprising a two stacked dielectric films (13, 14) wherein an electrode (15) is disposed therein, thereby demonstrating the art-recognized suitability of the arrangement (4, 22-30). It would have been obvious to provide an electrode within Robbins' dielectric film in order to achieve the predictable result of providing a voltage to the chuck.

Lastly, Robbins does not form first through channels through the dielectric to connect to the second cooling channel parts. In supplementation, Figure 3 of Ishikawa delineates an embodiment wherein multiple through holes (18) are formed through the dielectric film to provide a refrigerant to the cooling channels (4, 46-58). By employing a plurality of through holes distributed across the entirety of the chuck, the refrigerant is dispersed with greater uniformity. For this reason, it would have been obvious to augment Robbins' chuck with additional through channels.

Claim 3: This claim refers to the diameter of the wafer to establish the site of the first cooling channel part. However, the size of the wafer is variable, and expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining the patentability of the apparatus claim (*Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969)). Further, inclusion of material or articles worked upon by a structure being claimed does not impart patentability to the claims (*In re Young*, 75 F.2d, 25 USPQ 69 (CCPA 1935)). The operator can simply employ a substrate having the necessary size to satisfy the limitations of this claim.

Claim 4: Robbins teaches eight second cooling channel parts (3, 44-46). Further, regarding the connectivity of the first through channels and the second cooling channel parts: The applicant has not demonstrated the criticality of or the unexpected results to be achieved due to this claimed connectivity, and it is the Office's position that simply connecting the first through channels to any site on the second cooling channel parts would achieve a result commensurate with the applicant's claimed connectivity. Further, one of ordinary skill would have arrived at the applicant's connectivity merely through the routine experimentation of possible connection sites along the second cooling channels.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al., US 2004/0040933.

Claim 5: Kanno discloses a chuck base comprising:

- A base body (52) for supporting a chuck (Fig. 1);
- A cooling channel for cooling the chuck, the channel comprising ([0075], Fig. 5):
  - An interior curved part (circumscribing holes 61 and 62) which extends outward from the center of the base under the surface of the chuck base;
  - A circular part (15) connected to the curved part and being formed in the shape of a circle around the interior curved part.

The examiner acknowledges that the cooling element designated as the "interior curved part" is not cross-shaped, formally speaking. However, the interior part does expand at the center region and taper at the upper and lower terminal points in the same manner as a cross. Further, the applicant has not demonstrated the unexpected results that would be achieved by employing a strictly cross-shaped interior part as opposed to a roughly cross-shaped interior part. It is thus the Office's position that the interior part disclosed by Figure 5 of Kanno would beget cooling results commensurate with a strictly cross-shaped interior part. Lastly, it has been held that the configuration of the claimed element is a matter of choice which a person of ordinary skill would have found obvious (*In re Dailey*, 149 USPQ 47).

Claim 6: That portion of Kanno's cooling branch which connects the interior to the exterior cooling part may be designated the "connection part." Further, as the interior and exterior cooling branches constitute one circular branch, the beginning and end can be arbitrarily designated to satisfy this limitation.

Claim 7: Kanno employs only three, rather than four, through holes (61) [0072]. However, merely duplicating one through hole to arrive at four is well within the sphere of ordinary skill – it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art (*St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8). Secondly, the through holes are positioned inside the interior curved part rather than between the interior curved part and the outer circular part. However, with reference to Figure 5, only the most negligible reconfiguration would be needed to shift the position of the through holes. This reconfiguration would not measurably compromise the efficacy of wafer cooling and could easily be accomplished through the application of ordinary skill – it has been held that rearranging the parts of an invention involves only routine skill in the art (*In re Japikse*, 86 USPQ 70).

Claim 8: With reference to Figure 1, Kanno provides only a single through hole (18) to provide electric power to the electrostatic chuck [0023]. It is the Office position that the simple duplication of an already existing through hole to arrive at multiple through holes is within the sphere of ordinary skill. Further, it has been held that mere

duplication of the essential working parts of a device involves only routine skill in the art (*St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8). As through hole 18 is formed in the center of the chuck base, the cooling channel must inevitably "extend around" it.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Examiner, Art Unit 1712

/Karla Moore/

Primary Examiner, Art Unit 1716